

2019

# PAWS PRINT

Discovering the World of Public Works

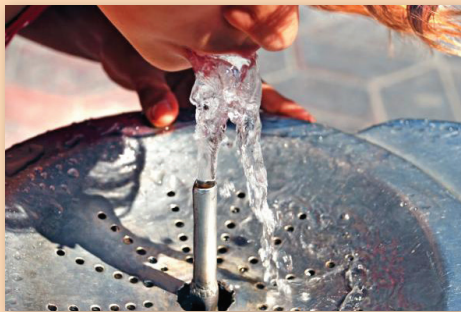


## CELEBRATING PUBLIC WORKS



### Public Works Works for You!

You might ask "What is public works?" Public works is services provided to the public, used by the public, and usually paid for by their tax dollars.



Public works can be found all around you. It is transportation (how people travel), construction (how public facilities are built), water and wastewater (how water is cleaned and goes through pipes), and more. You might have seen or used public works projects without knowing who did the work.



Remember, it's because of public works that your community is a better, safer place to live, work, and play. Look at these pictures—are any of these services familiar to you? 🐾





# What is National Public Works Week?

Are you ready for National Public Works Week? We are! In fact, we are so excited, we want you to celebrate with us.

National Public Works Week (NPWW) began in 1960. It is celebrated the third full week of May, which this year is May 19–25, 2019, in cities all over North America! What is it that we celebrate? The men and women of public works, of course! NPWW is when we think of all of the great things that the people of public works do. Why do they do them? To make your community a better place to live, work, and play. 🐾



*This year's National Public Works Week poster was created by Sam Ward. This year's theme is "It Starts Here"—What starts here? Well, a lot of things. Infrastructure, like roads, schools, parks, phone lines, water lines start with public works. New ideas and technologies for growing cities start with public works. Transportation, like busses, trains, and subways start with public works. Safe, secure, and healthy communities start with public works, too. The bottom line is that everyone's quality of life starts with public works.*

# 10 Things to Help Celebrate National Public Works Week

- 1 Ask your teacher to invite a public works employee to speak to your class.
- 2 Discover what public works employees think about their jobs (see pages 2, 8, and 10).
- 3 Tell your parents what you learned about public works.
- 4 Attend a public works open house or touch-a-truck event.
- 5 Pick up litter from your local park.
- 6 Build your own emergency kit (see page 8).
- 7 Draw your own P.W. Paws and Chipper comic strip (see page 9).
- 8 With some friends, design your own National Public Works Week poster.
- 9 See how many street signs you can identify on your way to school (see page 11).
- 10 Thank a public works employee for all his or her hard work! 🐾

## Meet Brittany Hanson

Surrey, British Columbia, Canada



### What is your job called?

I have been a laborer for the City of Surrey for the past five years.

### What do you do at public works?

I am assigned different tasks every day like mowing grass, filling potholes, or making sure the waterways are clear and don't back up, causing flooding.

### How did you enter the field of public works?

I first started at the City of Surrey for a summer job in 2013. I really enjoyed my time maintaining the city and working outside with my co-workers for those four months. Luckily, I got the chance to stay on that winter and then continue my career with the city.

### What do you like most about your job?

The part that I love about my job is working outdoors. I like to keep active so the day goes quickly and my body keeps moving. I also enjoy the variety of jobs, so my days aren't repetitive.

### What is the most interesting thing about your job?

It is probably the fact that I am constantly being trained to operate many different types of machines. I use backhoes, forklifts, and telehandlers—tractors that make moving heavy objects and material quicker and safer than doing it by hand.

### What was one of the strangest things you had to do on the job?

The grossest thing I ever had to do was pick up bags of rotting fish guts that were dumped on the side of the road during the summer. People could smell this garbage from blocks away!

# Pump it up for Pump Stations!

Flood control is a big part of public works. That can mean getting water from one place to another fast. One way to do that is to use water pumps. Now, imagine water pumps so big that they can pump fifteen Olympic-size swimming pools worth of water every minute! Put eleven of these pumps into a huge building and you have the largest pump station in the world. It's called the West Closure Complex, in Belle Chasse, Louisiana!

This pump station was built to keep floodwaters from devastating New Orleans just as they did during hurricane Katrina. About the area of two football fields, the pump station was built on the west bank of the Gulf Intercoastal Waterway. Most of the time, this busy waterway sees a lot of traffic from ships and barges. But during hurricanes, water can surge from the Gulf of Mexico, up the waterway, and flood New Orleans.

The West Closure Complex has two enormous gates that close off the waterway in the event of a storm. The gates are so strong that they block 16-foot (4.87 meters) swells of water and even runaway barges. Once the gates are shut, the northern parts of the waterway act like reservoirs to hold rainwater runoff from a 70-square mile (181.30 sq kms) area. Meanwhile the excess water is pumped out using one or all of the 11 pumps, each one powered by a diesel engine larger than a cargo van.

The largest pumping station in the world, along with 26 miles (41.84 kms) of levees and floodwalls, is one of the many ways public works helps protect people's lives and property just south of New Orleans!

## A SPILLWAY OF FACTS ABOUT THE WEST CLOSURE COMPLEX:

**Time to build:** 5 years

**Cost:** \$500 million

**Number of pumps:** 11

**Powering each pump:** 5,000 horsepower diesel engine

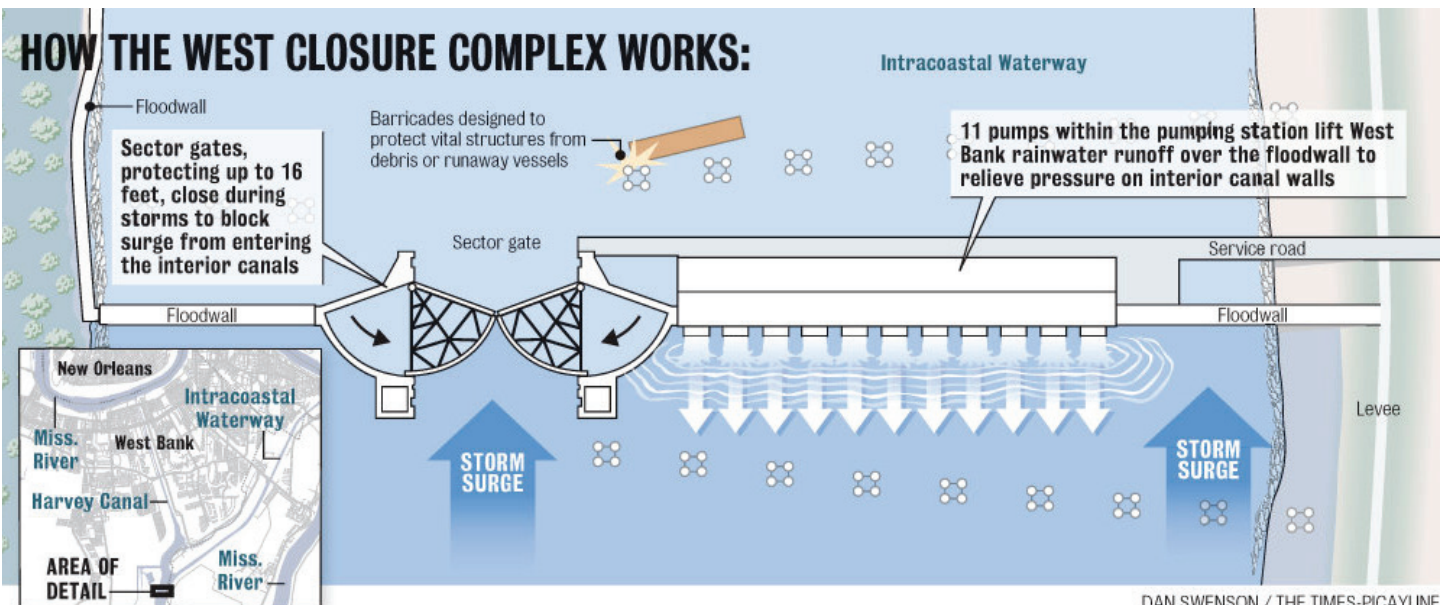
**Pump Rate:** 150,000 gallons (567,811.8 liters) of water per second

**Gates:** 32 feet tall (9.75 meters) by 225 feet wide (68.58 meters)

**Strength:** Withstanding 140 mph winds, blocking 16-foot (225.31 kph) water swells

## Pump quiz!

1. How many gallons (liters) of water can the West Closure Complex pump in two seconds?
2. If five of the complex's pumps are shut down for maintenance, how many can keep pumping?
3. If all the pumps are running at once, how much total horsepower is pumping in this pump station?
4. If you and your friends are just over 4 feet tall (1.2192 meters), how many of you would it take to stand on each other's shoulders and peek over the West Closure Complex's gates?



DAN SWENSON / THE TIMES-PICAYUNE



# Pump Station Parts

Anytime you need to move large quantities of liquid from one area to another, a pump station is your friend. It could be groundwater, fresh water, or sewage. You know who is not your friend? Gravity! That's right, if you're moving that liquid uphill, you need a pump station to fight gravity all the way. Here are some common parts of your friend...the pump station.

## Control Center

Where workers monitor the flow of liquid and have complete control over the following components:

## Generators

These create electricity that powers the entire facility.

## Valves

Think of these as doors for pipes. They can be opened and closed to let liquid through or keep liquid out. When you turn on a water faucet, you're opening a valve.

## Manifold

This is where one pipe splits into many different pipes. You need this if you want liquid to travel to different areas at once.

## Pumps

The workhorse of the pump station — it's right there in the name! These machines, big or small, move liquid from one place to another in two basic ways...

## Centrifugal Pump

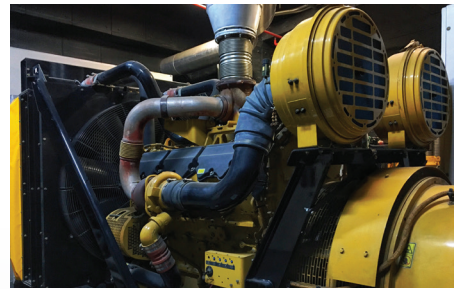
This pump uses a rotating blade called an impeller to create suction. Since the impeller spins, it creates centrifugal force (the force that moves outward as an object rotates). That's how it gets its name.

## Positive Displacement Pump

This pump creates an expanding chamber and traps a fixed amount of fluid. Then it compresses the chamber, forcing the liquid out.



Control Center



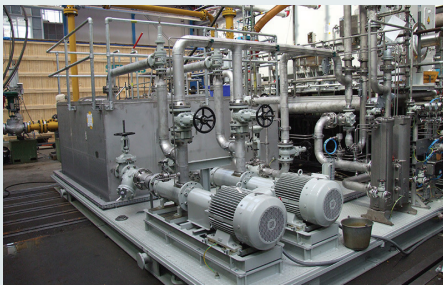
Generators



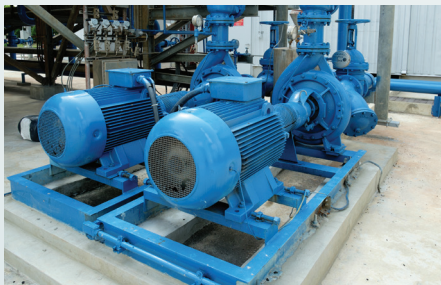
Valves



Manifold



Positive Displacement Pump



Centrifugal Pump



Pumps



# Public Works and California Wildfires

Once again, much of California has been ravaged by wildfires. The news is filled with images of destroyed woodlands and homes as well as the brave firefighters battling the blazes. What you don't often see are the many ways public works employees get right in the thick of it, often clearing a path for rescue workers.

Here are some ways public works employees sprang into action during the wildfires of 2017:

## Napa County

When wildfires occurred the night of October 8, Steve Stangland, Public Works Superintendent for Napa County, was responsible for keeping the county's 450 miles (724.20 meters) of roads and 79 bridges both open and safe.

"In a wildfire, our first tasks are to keep the roads cleared so firefighters can get in to do their job, and the roads closed to the public to keep both firefighters and the public safe," Mr. Stangland says.

## Sonoma County

When fire broke out, it was Johannes Hoevertsz's first day as Sonoma's new Director of Transportation and Public Works. "We didn't have the luxury of time to start evacuations ahead of the fire," he recalls, "so transit buses became evacuation vehicles for roughly 15,000 people."

## Ventura County

"Our city employees were prepared and knew exactly what to do," says Mary Joyce Ivers, the acting public works director at the time of the fires. At first, the employees focused their efforts on assisting police with street closures, especially in the city's hillside neighborhoods. When the entire city lost power, public works helped the water department with portable generators for water tanks.

## Los Angeles County

Mark Pestrella, P.E., is Director of Los Angeles County's Department of Public Works. He points out that after the fires, the arrival of rain creates a damaging, potentially toxic, debris flow.

As soon as the fires were contained, public works employees began assessing hillsides for their potential to create destructive mud and debris flows. They also had to clean out 154 debris basins upstream of the Los Angeles, Santa Clara, and San Gabriel rivers.

You may not hear about them as much, but public works plays a major role in fighting forest fires!



Mary Joyce Ivers



# Clear a Path

The firefighters can't battle the blaze until public works clear the roads. One path is open for traffic and ready to go. See if you can find the path public works has cleared.





## East Coast – Freeze Coast!

In the early months of 2018, several nor'easters slammed into New England, dumping snow over most of the east coast. It left power outages in its wake along with blizzard warnings issued for most of the region.

**Nor'Easter** – a storm or wind blowing in from the northeast (northeaster). Mainly in New England.

**New England** – The northeastern states in the U.S., consisting of Maine, New Hampshire, Vermont, Massachusetts, Rhode Island, and Connecticut.

The cold weather didn't just stay in New England. All of the east coast was affected. Virginia saw blizzard conditions of its own and southern states like South Carolina and Georgia got a few inches of snow and freezing rain.

Even Florida experienced colder than normal weather. Light snows brought some Florida cities to a standstill since they don't have snow removal equipment. And some freezes had near-frozen iguanas dropping from trees!

In the hardest hit states, public works employees worked overtime to keep the city safe. The Massachusetts Department of Transportation had 3,200 pieces of snow-fighting equipment deployed on highways. Meanwhile, the Boston Department of Public Works had more than 700 plows and sanders on the job! 🐾



### Snow Plow Safety

Snowplows are big heavy trucks and are usually out plowing just after or right in the middle of a big winter storm. And guess what? In conditions like that, it's not easy for drivers to see kids playing close to the road. Here are some rules to help stay safe while the snowplows are out doing their thing!

1. Don't play in or near the road. Remember, it's hard for the drivers to see you.
2. Wear bright colors. This helps you stand out in all of that white snow.
3. Be extra careful when crossing the street. Slick roads can keep cars and trucks from stopping safely.
4. Don't dig a tunnel or build a fort in the snow banks at the edge the road. This is too close to those big, heavy snowplows.

It's always fun to play in the snow. Just keep these tips in mind so you can stay safe while having a fabulously frosty time! 🐾





# Meet Christopher F. Gallagher, P.E.

Foxborough, Massachusetts



## What is your job called?

Town Engineer

## What do you do at public works?

I plan, design, and supervise the construction of all public works projects. These include water, sewer and drainage pipes, paving roads, and repairing sidewalks. I help plan vehicle replacement, including cars, trucks, loaders, and other heavy equipment. I also manage snow plowing operation including driving a plow truck during snowstorms.

## How many public works employees spring into action during the winter storms?

The Town of Foxborough Department of Public Works used 31 of our full time employees in plow trucks, sidewalk machines, and heavy equipment with plows keeping the roads safe and passable. We also used 21 pieces of snowplow equipment from contractors.

## What preparations happen before a storm?

We meet with the supervisors and prepare all equipment. Plow routes are pre-assigned for the season, so that type of work is known before the storm.

## What did you learn for the next storm?

No nor'easter is like another. In Massachusetts we get a lot of heavy and wet snow. We ended up with over 100 trees falling down throughout one particular storm. We then had to shift a crew from snow removal to tree removal. We also try to have as many trucks equipped with chain saws as we can, so as drivers who come across an issue can resolve it and keep plowing.

## What do you want people to know about public works?

We all work hard every day to keep the public safe and improve their daily lives. We keep the roads safe in all weather environments, allowing for Police and Fire to get to your house during an emergency. We take care of the public, even when they don't know we're doing it.



## P.W. Paws says, "Be prepared! Make an emergency kit!"



No matter where you live, an emergency could happen. So, you should have a family emergency kit ready. Ask your parents to help you pack one! It should include:

- A flashlight and spare batteries
- A battery operated radio
- Food and snacks for several days
- Bottled water (three gallons for each person)
- Cash
- Blankets
- A first aid kit
- A change of clothes for each person in your family
- List of emergency phone numbers—police, water department, gas company, etc.
- A form of identification for each family member
- Games, toys, or stuffed animals for kids





# Moving with Autonomous Vehicles

What is an autonomous vehicle, you ask? It's a car or bus that can drive itself! Imagine a world where autonomous vehicles—or AVs—take you to work or school. Maybe a store sends an AV to your house to pick you up and take you shopping. Maybe large AVs carry you and your entire family across the country, with a place to eat and sleep as you travel.

Once AVs are mainstream, they could be safer than regular cars and busses. And since they'll probably be electric, they'll likely reduce harmful pollution and make less noise.

Lincoln, Nebraska is ahead of the curve, testing the state's first self-driving shuttle. The electric-powered vehicle carries up to 15 passengers and will be monitored by an onboard operator during testing.

The shuttle is 15 feet long (4.57 meters) and a computer tells it where to go, when to accelerate, and when to brake. It has several cameras, a GPS (Global Positioning System), and various sensors that keep it moving in the right direction without hitting any obstacles.

As more AVs pull onto the streets, public works across the country will have their hands full adapting the infrastructure to handle the new vehicles. Governor Kasich of Ohio has made that a bit easier for his state. He signed an executive order letting researchers test AVs on Ohio roadways, after they meet several safety requirements, of course.

Ohio is already investing in upgrades that let traffic-control signals send critical travel and weather information to drivers. This will improve emergency response time and manage congested traffic.

As you begin to see AVs more and more, you can be sure that public works will be behind the scenes making their drive as smooth as possible. It could be upgrading streets, providing charging stations along roadways, or even adding smart traffic signals and road signs that communicate with the AVs themselves! 🐾



*A self-driving shuttle, the first of its kind in Nebraska*

## Test Drive





# First Responder National Symbol

The American Public Works Association proudly announces the brand new national “Public Works First Responder” symbol!

In 2017, the APWA Board of Directors approved the new symbol for use throughout North America. It not only identifies public works personnel but also acknowledges their federally-mandated role as first responders.

The symbol is available to all public works agencies in order to raise awareness among citizens, government officials, and other first responders about the key role public works plays in emergency management situations.

**PUBLIC WORKS**

**FIRST RESPONDER**



## First Responder Reponse

**Lance Meyer, P.E.**  
Minot, North Dakota



**What is your job called?**  
City Engineer

**What do you do at public works?**

I design the roads, water and sewer pipes, and other infrastructure needed to make our city a place where people can live, work, and play.

**What do you like most about your job?**

Every day is a new problem to solve. This keeps our work interesting and fun.

**What happened in one of your “first responder” situations?**

In 2011, our community was faced with the most devastating flood in our history. We had to evacuate part of the city. We worked with the Army Corps of Engineers to build miles of temporary embankments to protect as much of our city as possible. We also had to protect and repair our drinking water system to provide water to over 75,000 people.

**What was the biggest challenge for your community?**

Trying to save as many lives as we could during the flood. We are happy to say that no one died during the emergency and we protected as much of the city as we could with limited time and resources. However, the flood recovery took years to complete.

**What did you learn for the next first emergency?**

Teamwork, communication, and having emergency response procedures in place are critical for future disasters.



# A Rainbow of Road Signs

United States roadway signs come in all different shapes and sizes. You probably noticed that they come in many colors, too! Did you know that each of those colors means something? Check out their meanings below, and then test your knowledge the next time you go on a trip!

**RED – stop or prohibition** - This color tells you to stop or tells you something that you're not supposed to do.

**WHITE – regulatory signs** - This color shows you a specific rule.

**YELLOW – warning signs** - These signs warn you about something up ahead like a crossroad, a slippery road, or railroad crossing.

**ORANGE – construction signs** - These are temporary signs that tell you about construction workers or detours ahead.

**FLUORESCENT GREEN – pedestrian signs** - This color warns you about nearby playgrounds, school zone crosswalks, and bicycle crossings.

**BLUE – services signs** - Tell you about nearby services like hospitals, rest areas, or gas stations.

**GREEN – guide signs** - These help guide you when you travel.

**BROWN – recreation signs** - The color to watch for when you're on vacation!

## Did you know...

Stop signs used to be yellow? That's right! Up until 1954, stop signs used to be yellow with black letters. The bright yellow definitely stood out, but since yellow was used for warning signs (even back then), stop signs needed something that meant more than just a simple warning. So it was decided that they should be red, just like stoplights, because red ... means stop!



P.W. Paws has his work cut out for him. He and Chipper have to sort through all these road signs and count how many of each kind there are. Can you help by counting up each set of signs and then writing the totals on P.W.'s clipboard? Try to find them all! 🐾



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